

B.) REMARKS

This Response is filed in response to the Office Action dated June 1, 2006.

Upon entry of this Response, claims 1-26 will be pending in the Application.

In the outstanding Office Action, the Examiner rejected claims 1 and 17 under 35 U.S.C. 102(b) as being anticipated by Pirskanen (International Publication No. WO 03/073025); rejected claims 1, 2 and 17 under 35 U.S.C. 102(b) as being anticipated by Rafuse Jr. et al. (U.S. Patent No. 5,797,729); provisionally rejected claims 1, 2 and 17 on the ground of nonstatutory double patenting over claims in copending Application No. 10/822,492; and indicated claims 3-16 and 18-26 would be allowable if rewritten in independent form.

Rejection under 35 U.S.C. 102

The Examiner rejected claims 1 and 17 under 35 U.S.C. 102(b) as being anticipated by Pirskanen (International Publication No. WO 03/073025), hereinafter referred to as "Pirskanen."

Specifically, the Examiner stated that

2. Claims 1 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Pirskanen (WO 03/073025).

Pirskanen discloses a method and apparatus for controlling refrigerating installation. The method comprises steps of selecting two or more compressors connecting each to its own frequency converter, controlling the frequency range of the compressors controlled by the frequency converters and controlling the operation to meet the required output (predetermined criteria) by starting the compressors in a predetermined order and by controlling the frequency of the compressors connected to the frequency converters. The refrigeration circuit is inherent in the system. One predetermined criteria is disclosed in this prior art.

Applicant respectfully traverses the rejection of claims 1 and 17 under 35 U.S.C. 102(b).

Pirskanen, as understood, is directed to a method for controlling refrigeration installations, having steps of selecting two or more compressors, at least two of which differ in output, connecting one or more of the selected compressors to its own frequency converter, coupling the selected compressors in series so as to provide a refrigerating unit, controlling the frequency range of the compressors by the frequency converters such that they provide

continuous power control and controlling the obtained refrigerating unit to meet the required output need by starting and stopping the compressors and by controlling the frequency of the compressors connected to the frequency converters.

In contrast, independent claim 1 recites a method for determining a number of compressor to start in a multiple compressor chiller system. The method includes the steps of providing a multiple compressor chiller system having a predetermined number of inverters, each inverter being configured to power a corresponding motor of a compressor. The method also includes the steps of designating a number of inverters to be enabled on startup of the multiple compressor chiller system. The designated number of inverters to be enabled on startup is initially equal to the predetermined number of inverters, and the enabling of an inverter at startup of the multiple compressor chiller system starts a corresponding compressor. The method further includes the steps of determining whether at least one predetermined criteria related to conditions of the multiple compressor chiller system is satisfied and reducing the designated number of inverters to be enabled on startup by a predetermined amount in response to a determination that a predetermined criteria has been satisfied.

Also, independent claim 17 is directed to a multiple compressor chiller system having a plurality of compressors. Each compressor of the plurality of compressor being driven by a corresponding motor and the plurality of compressors are incorporated into at least one refrigerant circuit. Each refrigerant circuit includes at least one compressor of the plurality of compressors, a condenser arrangement and an evaporator arrangement connected in a closed refrigerant loop. The chiller system also includes a variable speed drive to power the corresponding motors of the plurality of compressors. The variable speed drive has a converter stage, a dc link stage and an inverter stage. The inverter stage includes a plurality of inverters each electrically connected in a parallel to the DC link stage and each powering a corresponding motor of the plurality of compressors. The chiller system further includes a control panel having a microprocessor and a memory device storing at least one control program. The control panel is configured to determine a number of compressors of the plurality of compressors to start on a startup of the multiple compressor chiller system, and includes means for designating at least one compressor of the plurality of compressors as the number of compressors of the plurality of

compressors to start, means for evaluating at least one predetermined criteria related to system conditions, and means for adjusting the numbers of compressors of the plurality of compressors to start by a predetermined amount in response to satisfying a predetermined criteria.

The examiner is reminded that “[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.’ *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).” See Manual of Patent Examining Procedure, 8th Edition (MPEP), Revision 4, Section 2131.

In addition, “[t]he identical invention must be shown in as complete detail as is contained in the ... claim.’ *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).” See MPEP, Section 2131.

Several of the features recited by Applicant in independent claims 1 and 17 are not taught or suggested by Pirskanen. First, Pirskanen does not teach or suggest designating all of the compressors of the system for starting as recited by Applicant in independent claim 1. Applicant recites a method for determining a number of compressors to start in a multiple compressor chiller system having a variable speed drive with a plurality of inverters based on predetermined criteria. Based on that criteria, either all of the predetermined number of compressors are started, or less than all of the predetermined number of compressors are started. Pirskanen does not teach a system where a predetermined criteria is evaluated to reduce the number of compressors to start. In contrast, Pirskanen teaches a system where a number of compressors are used for a system and the operation of those compressors are controlled throughout operation of the system. Pirskanen does not teach a method where the number of compressors to start is determined as Applicant recites in claim 1. Instead, Pirskanen teaches a system where all of the compressors are started and then during the operation of the compressors, the compressors are stopped if their operation is not necessary for the system. (See *Pirskanen* para. [0011], line 33-35). The Examiner is requested to identify the specific passage in Pirskanen that teaches reducing the number of compressors to start before the system is in operation. In addition, Pirskanen does not teach the use of a variable speed drive having a predetermined number of inverters as Applicant recites in claim 1. Thus, since Pirskanen does not teach or suggest all of the limitations recited in

independent claim 1, Applicant respectfully submits that Pirskanen does not anticipate Applicant's invention as recited in independent claim 1.

Pirskanen also does not teach or suggest all of the features recited by the Applicant in independent claim 17. First, Pirskanen does not teach or suggest a variable speed drive having a plurality of inverters connected to corresponding compressors, as Applicant recites in claim 17. Further, Pirskanen does not teach or suggest adjusting a number of compressors to start by a predetermined amount based on predetermined criteria, as Applicant recites in claim 17. In contrast, Pirskanen teaches controlling the operation of the compressors once operation has begun as discussed above. Thus, since Pirskanen does not teach or suggest all of the limitations recited in independent claim 17, Applicant respectfully submits that Pirskanen does not anticipate Applicant's invention as recited in independent claim 17.

Therefore, for the reasons given above, independent claims 1 and 17 are believed to be distinguishable from Pirskanen and therefore are not anticipated nor rendered obvious by Pirskanen.

In conclusion, it is respectfully submitted that claims 1 and 17 are not anticipated nor rendered obvious by Pirskanen and are therefore allowable.

The Examiner rejected claims 1, 2 and 17 under 35 U.S.C. 102(b) as being anticipated by Rafuse Jr. et al. (U.S. Patent No. 5,797,729), hereinafter referred to as "Rafuse."

Specifically, the Examiner stated that

3. Claims 1, 2 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Rafuse Jr. et al. (U.S. Patent Number 5,797,729).

Rafuse Jr. et al. disclose a method and apparatus for controlling multiple variable speed compressors. Referring to Fig. 1, the apparatus comprises controller 32, compressor drive 34, 36, 38, compressor 10, 12, 14, condenser 22, expansion valve and evaporator 16. The controller is configured to determine the subset of compressors by comparing a required rack capacity against a stored set point table defining a plurality of ranges of required rack capacity over which different subsets of the plurality of variable speed compressors provide a greater energy efficiency ratio than any other subsets.

Applicant respectfully traverses the rejection of claims 1, 2 and 17 under 35 U.S.C. 102(b).

Rafuse, as understood, is directed to a refrigeration system controller capable of controlling a plurality of variable speed compressors that share a common discharge line and a common suction line. Each of the variable speed compressors includes a compressor drive with a variable frequency drive to generate the desired output speed of the compressor. The controller operates each variable speed compressor at a speed substantially the same as the other energized variable speed compressors by determining a required compressor capacity for a refrigeration load, and energizing a combination of the variable speed compressors that provides the required compressor capacity and has a higher energy efficiency ratio than other combinations of compressors.

Several of the features recited by Applicant in independent claims 1 and 17 are not taught or suggested by Rafuse. First, Rafuse does not teach or suggest having one variable speed drive as recited by Applicant in independent claim 1. Rafuse teaches the use of multiple drives (See Fig. 6, Ref. #34, #36, #38) that are controlled by comparing a capacity requirement of the refrigeration system against a stored set point table stored in the controller. Independent claim 1 recites having only one variable speed drive having a predetermined number of inverters that are configured to power a corresponding motor of a compressor. Since each drive in Rafuse has its own inverter, Rafuse cannot teach a drive with a predetermined number of inverters. The Examiner is requested to identify the specific passage in Rafuse that teaches having a variable speed drive with multiple inverters. In addition, Rafuse does not teach or suggest the determination of the number of compressors to operate at startup of the system as recited by Applicant in claim 1. Rafuse teaches starting all of the compressors and then controlling the speed and capacity of the compressors once the system is operating (See *Rafuse* Col. 3, line 62-65). Thus, since Rafuse does not teach or suggest all of the limitations recited in independent claim 1, Applicant respectfully submits that Rafuse does not anticipate Applicant's invention as recited in independent claim 1.

In addition, Rafuse does not teach or suggest having a variable speed drive having a plurality of inverters as recited by Applicant in independent claim 17. Rafuse teaches the use of multiple drives (See Fig. 6, Ref. #34, #36, #38) to power the plurality of compressors such that

each compressor has its own drive. Since each compressor in Rafuse has its own drive with an inverter, Rafuse cannot teach a drive with a plurality of inverters. Rafuse also does not teach determining the number of compressors to operate upon startup of the system based on predetermined criteria. Rafuse teaches starting all compressors of the system and obtaining and processing information based on the system and controlling the operation and capacity of the compressors. (See *Rafuse*, claim 1) Thus, since Rafuse does not teach or suggest all of the limitations recited in independent claim 17, Applicant respectfully submits that Rafuse does not anticipate Applicant's invention as recited in independent claim 17.

Dependent claim 2 is believed to be allowable as depending from what are believed to be allowable independent claim 1 for the reasons given above. In addition, claim 2 recites further limitations that distinguish over the applied art.

Therefore, in view of the above, dependent claim 2 is believed to be distinguishable from Rafuse and therefore are not anticipated nor rendered obvious by Rafuse. It is respectfully submitted that independent claims 1, 2 and 17 are not anticipated nor rendered obvious by Rafuse and are therefore allowable.

In conclusion, it is respectfully submitted that claims 1, 2 and 17 are not anticipated nor rendered obvious by Pirskanen or Rafuse and are therefore allowable.

Allowable Subject Matter

The Examiner objected to claims 3-16 and 18-26 as being dependent upon a rejected base claim, but indicated that the claims would be allowable, if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicant appreciates the Examiner's indication of allowable subject matter, but believes that all of the claims are allowable for the reasons given above.

Provisional Double Patenting Rejection

Applicant acknowledges the Examiner's provisional rejection of claims 1, 2 and 17 on the ground of non-statutory obviousness-type double patenting over claims 2-7, 33-35 and 44-46 of copending Application No. 10/822,492 (US 2005/0223724). As claims 1, 2 and 17 are currently rejected by the Examiner, Applicant defers any formal response to the provisional double patenting rejection until claims 1, 2 and 17 are indicated by the Examiner as being allowable over the art of record.

CONCLUSION

In view of the above, Applicant respectfully requests reconsideration of the Application and withdrawal of the outstanding objections and rejections. As a result of the amendments and remarks presented herein, Applicant respectfully submits that claims 1, 2 and 17 are not anticipated by nor rendered obvious by Pirskanen or Refuse and thus, are in condition for allowance. As the claims are not anticipated by nor rendered obvious in view of the applied art, Applicant requests allowance of claims 1-26 in a timely manner. If the Examiner believes that prosecution of this Application could be expedited by a telephone conference, the Examiner is encouraged to contact the Applicant.

The Commissioner is hereby authorized to charge any additional fees and credit any overpayments to Deposit Account No. 50-1059.

Respectfully submitted,
McNEES, WALLACE & NURICK

/Brian T. Sattizahn/

By

Brian T. Sattizahn
Reg. No. 46,401
100 Pine Street, P.O. Box 1166
Harrisburg, PA 17108-1166
Tel: (717) 237-5258
Fax: (717) 237-5300

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